

Notice of Allowability

Application No.

10/783,676

Examiner

Shouxiang Hu

Applicant(s)

MARCOUX ET AL.

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.
2. ☒ The allowed claim(s) is/are 32,33 and 36-40.
3. ☒ The drawings filed on 20 February 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

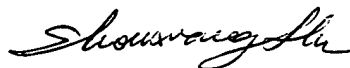
* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 11/01/04 & 2/20/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20050331
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____



SHOUXIANG HU
PRIMARY EXAMINER

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Judith A. Szepesi (RN: 39,393) on March 31, 2005.

The application has been amended as follows:

IN THE CLAIMS

1-31. Canceled.

32. (Currently Amended) A packaged diode comprising:

a substrate;

an impurity region implanted in the substrate;

a cathode contact region in contact with the substrate;

an anode contact region in contact with the impurity region;

an insulating layer over a portion of the substrate, so as to expose at least a portion of the cathode contact region and at least a portion of the anode contact region;

an anode post and a cathode post on the insulating layer;

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a first conductive layer over the anode post, the first conductive layer
extending so as to be in contact with the impurity anode contact region;

a second conductive layer over the cathode post, the second conductive
layer extending so as to be in contact with the substrate cathode contact region;

wherein the first conductive layer only covers a portion of a top surface of
the anode post; and

wherein the second conductive layer only covers a portion of a top surface
of the cathode post.

33. (Currently Amended) The packaged diode of claim 32, wherein the
substrate of is an N-type substrate, and the impurity region is a P-type impurity.

34. (Cancelled)

35. (Cancelled)

36. (Original) The packaged diode of claim ~~35~~ 32, wherein the posts are made
of one of the materials selected from: silicon, gallium arsenide, silicon germanium,
silicon carbide, gallium phosphide, ceramic materials, sapphire quartz, polymer plastic,
patterned plastic, epoxy, glass, Teflon, silicon dioxide, or polysilicon.

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37. (Original) The packaged diode of claim 32, wherein the first and second conductive layers are gold.

38. (Original) The packaged diode of claim 37, further comprising a connective layer over the first and second conductive layers, the connecting layer comprising:

a nickel layer; and

a flash gold layer.

39. (Original) The packaged diode of claim 32, further comprising a final passivation layer, the final passivation layer covering portions of the first conductive layer and the second conductive layer, the substrate, and the cathode post and the anode post, ~~the final passivation layer leaving exposed on the~~ so as to expose a top portion of the first conductive layer ~~on top of the anode~~ and a top portion of the second conductive layer ~~on top of the cathode~~.

40. (Original) The packaged diode of claim 39, wherein the final passivation layer is polyimide.

Allowable Subject Matter

Claims 32, 33, and 36-40 are allowed.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: Prior art does not teach or render obvious a packaged diode as defined in the above allowed claims, comprising particularly: a cathode contact region in contact with the substrate and an anode contact region in contact with an impurity region in the substrate; an insulating layer over a portion of the substrate and underlying an anode post and a cathode post; a first and a second conductive layers over the anode and cathode posts, respectively, and extending so as to be in contact with the anode and cathode contact regions, respectively, wherein the first and second conductive layers only covers a portion of the top surface of the anode post and a portion of the top surface of the cathode post, respectively.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References A and B are cited as being related to a surface-mounting packaging structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
March 31, 2005



SHOUXIANG HU
PRIMARY EXAMINER